UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,932	11/18/2003	Susumu Ogawa	HITA.0460	3018

38327 7590 06/08/2005

REED SMITH LLP
3110 FAIRVIEW PARK DRIVE, SUITE 1400
FALLS CHURCH, VA 22042

EXAMINER	
RODRIGUEZ, GLENDA P	
ART UNIT	PAPER NUMBER
2651	

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/714,932	OGAWA ET AL.	
	Examiner	Art Unit	
	Glenda P. Rodriguez	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/18/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3-5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Akiyama et al. (US Patent No. 5, 949, 600).

Regarding Claim 1, Akiyama et al. teach a magnetization control method, comprising:

Providing at least one metal probe (Col. 1, L. 49-60);

Providing a substrate (Fig. 15, Element 10);

Providing on the substrate a multilayer film including a first ferromagnetic metallic layer, a non-magnetic metallic middle layer, and a second ferromagnetic metallic layer located facing said metal probe (Fig. 15, Elements 11 and 12);

Maintaining the distance between said metal probe and said multilayer film as substantially constant so as not to contact said multilayer film (Col. 8, L. 12-24 and Col. 11, L. 44-56);

Providing an electric field between said metal probe and said multilayer film (Col. 1, L. 49-60, wherein Akiyama teaches sending a tunnel current (which is known to produce an electric field) through the probe to the disk).);

And controlling the electric field to change at least one direction of magnetization of said ferromagnetic metallic layers (Col. 7, L. 39 to Col. 8, L. 24, wherein the

magnetic field is being controlled by the voltage being supplied to the probe in order to provide accurate magnetization to the disk.).

Apparatus claims (3 and 4) are drawn to the apparatus corresponding to the method of using same as claimed in claim (1). Therefore apparatus claims (3 and 4) correspond to method claim (1), and are rejected for the same reasons of anticipation as used above.

Regarding Claim 8, Akiyama et al. teach all the limitations of Claim 3. Akiyama et al. further teach wherein the ferromagnetic metallic layer of said multilayer film, which faces said metal probe is made into domains which have been spatially divided in units of information to be recorded (Col. 1, L. 49-60, it is inherent that the signals being magnetized is known to be data (i.e. servo or user).).

Regarding Claim 5, Akiyama et al. teach all the limitations of Claim 4. Akiyama et al. further teach the following:

Wherein metal probe opposes said multilayer film at the tip of the end of the arm, one of which is rotatably supported and the other end is extended to said disk-shaped medium (Col. 2, L. 23-25);

At the arm there is a slider (See Abstract Akiyama et al.);

Whereby a distance between said metal probe and said multilayer film is maintained substantially constant by said slider so that the metal probe will not contact said multilayer film (Col. 8, L. 12-24 and Col. 11, L. 44-56);

Wherein said metal probe is structured so that an electric field between said metal probe and said multilayer film is controlled to change at least one direction of magnetization of said ferromagnetic metallic layer for recording information

corresponding to said electric field (Col. 1, L. 49-60, wherein Akiyama teaches sending a tunnel current (which is known to produce an electric field) through the probe to the disk).); and

Wherein aid metal probe is structured so that between said metal probe and said multilayer film, there is applied a voltage for flowing tunnel current through to read information recorded by a change in said tunnel current corresponding to a change in a direction of magnetization due to an electric field which corresponds to said information (Col. 1, L. 49-60, wherein Akiyama teaches sending a tunnel current (which is known to produce an electric field) through the probe to the disk). See also Col. 7, L. 39 to Col. 8, L. 24).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. in view of Gill (US Patent No. 6, 650, 512).

Regarding Claims 2 and 9, Akiyama et al. teaches all the limitations of Claims 1 and 3, respectively. Akiyama et al. does not distinctively teach wherein providing an anti-ferromagnetic layer between the first ferromagnetic layer and the substrate. However, this feature is well known in the art as disclosed by Gill, wherein it teaches an anti-ferromagnetic layer between the first ferromagnetic layer and the substrate (Col. 12, L. 50 to Col. 13, L. 10). It

would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Akiyama et al.'s invention with the teaching of Gill in order to provide more efficient magnetization to the medium.

Regarding Claim 6, Akiyama et al. teach all the limitations of Claim 5. Akiyama et al. does not explicitly teach information being recorded by a provided GMR element or a TMR element. However, Gill does teach the use of a GMR element to control the magnetization in a disk (See Abstract of Gill). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Akiyama et al.'s invention with the teaching of Gill in order to provide more efficient magnetization to the medium.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. in view of Kobayashi (US Patent No. 6, 687, 200). Akiyama et al. teaches a multilayer film including a ferromagnetic metallic layer, a middle non-magnetic metallic layer, and a ferromagnetic metallic layer for facing the probe (See Fig. 15 of Akiyama et al.), Wherein a distance between the probe and said multilayer film is maintained substantially constant (Col. 8, L. 12-24 and Col. 11, L. 44-56); Wherein an electric field between the probe and said multilayer film is controlled to change at least one direction of magnetization of said ferromagnetic metallic layer for recording information corresponding to said electric field (Col. 1, L. 49-60, wherein Akiyama teaches sending a tunnel current (which is known to produce an electric field) through the probe to the disk).); Wherein said probe is structured so that between said probe and said multilayer film, there is an applied voltage for flowing tunnel current through to read information recorded by a change in said tunnel current corresponding to a change in a direction of magnetization due to an electric field which corresponds to said information (Col. 1, L. 49-60,

wherein Akiyama teaches sending a tunnel current (which is known to produce an electric field) through the probe to the disk). See also Col. 7, L. 39 to Col. 8, L. 24). Akiyama et al. does not explicitly teach wherein there is a plurality of probes. However, this feature is disclosed by Kobayashi, wherein it teaches a plurality of probes for magnetization of a media (Col. 21, L. 3-12). It would have been obvious to a person of ordinary skill in the art, at the time the invention was made, to modify Akiyama et al.'s invention with the teaching of Kobayashi in order to control the magnetization in the media.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matsuda et al. (US Patent 5, 448, 421).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenda P. Rodriguez whose telephone number is (571) 272-7561. The examiner can normally be reached on Monday thru Thursday: 7:00-5:00; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gpr
May 31, 2005.

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600